National Institute of Environmental Health Sciences

El Niño Southern Oscillation (ENSO) and dysentery in Shandong province, China

Author(s): Zhang Y, Bi P, Wang G, Hiller JE
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Abstract:

To investigate the impact of the El Niño Southern Oscillation (ENSO) on dysentery transmission, the relationship between monthly dysentery cases in Shandong Province of China and the monthly Southern Oscillation Index (SOI), a broad index of ENSO, was examined over the period 1991-2003. Spearman correlations and generalized linear models were calculated to detect the association between the SOI and dysentery cases. Data from 1991 to 2001 were used to estimate the parameters, while data from 2002 to 2003 were used to test the forecasting ability of the model. After controlling for seasonality, autocorrelation, and a time-lagged effect, the results indicate that there was a significant negative association between the number of dysentery cases and the SOI, with a lagged effect of 2 months. A one-standard-deviation decrease in the SOI might cause up to 207 more dysentery cases per month in Shandong Province. This is the first report of the impact of the Southern Oscillation on dysentery risk in China, indicating that the SOI may be a useful early indicator of potential dysentery risk in Shandong Province.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

El Nino Southern Oscillation, Extreme Weather Event, Meteorological Factors, Precipitation, Temperature

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease (other): Dysentery

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content